

lists of shipping rates to the public. The proposal was strongly opposed by the private firms that gathered such data from official sources and then sold the information to interested parties.¹⁰⁶

Circular A-130 was amended in 1993 to encourage agencies to maximize the information provided to the public.¹⁰⁷ (See Appendix C for the current version of Circular A-130.) The revised Circular also precluded setting user fees for information above the cost of dissemination. The Paperwork Reduction Act of 1995, passed unanimously by both houses of Congress and signed by President Clinton, adopted the A-130 principles. In addition, President Clinton recently issued a Memorandum to Executive Departments that promotes further dissemination of government information on-line (see Appendix B for the memorandum).¹⁰⁸

Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role

Improving the efficiency with which inherently governmental services are provided is socially beneficial. Therefore, shifting activities previously undertaken off-line into on-line activities should be encouraged (e.g., license and passport applications). For example, the ServiceArizona web site created by the state government in Arizona allows people to replace lost driver's licenses, renew the registrations for their vehicles, and order personalized license plates on the web rather than having to appear in person at a state office.¹⁰⁹ Undertaking internal

¹⁰⁶ John Markoff, "Giving Public U.S. Data: Private Purveyors Say No," *New York Times*, March 4, 1989.

¹⁰⁷ Bill McAllister, "White House Reverses Reagan Policy, Drops Profit Motive in Data," *The Washington Post*, July 1, 1993. The amendments had been prepared, but never signed, before the Clinton Administration took office.

¹⁰⁸ For further discussion of steps that the government should be taking to expand dissemination of data and information on-line, see Robert D. Atkinson and Jacob Ulevich, "Digital Government: The Next Step to Reengineering the Federal Government," Progressive Policy Institute, March 2000.

¹⁰⁹ <http://servicearizona.ihost.com>. See also Matthew Symonds, "Government and the Internet," *The Economist*, June 24, 2000, Survey, page 3.

governmental activities more efficiently through information technologies should also be encouraged (e.g., the development of a web-based system for managing governmental energy use).

Such improvements in efficiency should be undertaken despite any potential displacement or reduction in revenue of private firms. For example, the displacement of private-sector “facilitators,” who help to speed passport applications for a fee, should not impede the government from moving passport processing on-line. The granting of passports is an inherently governmental function, and it should be undertaken as efficiently as possible.

An example of an action that would be warranted under this principle is the publication of public filings with the Securities and Exchange Commission (SEC) through EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system. The EDGAR system is an automated, on-line system of collecting and indexing submissions to the SEC required by law. According to the SEC, “Its primary purpose is to increase the efficiency and fairness of the securities market for the benefit of investors, corporations, and the economy by accelerating the receipt, acceptance, dissemination, and analysis of time-sensitive corporate information filed with the agency.”¹¹⁰ Allowing on-line access to public documents that are required by statute to be filed with the SEC – and that previously were publicly available, but difficult to obtain – represents sound policy. Yet sponsoring EDGAR on the SEC web site was the source of substantial controversy, at least

¹¹⁰ See <http://www.sec.gov/edaux/wedgar.htm>.

partly if not largely because private-sector providers were charging fees for access to the same information.¹¹¹

Principle 3: The support of basic research is a proper governmental role

Basic research is a public good. It is often difficult to exclude others from sharing in the gains from research advances, and providing the information regarding those advances to others entails no additional cost. Because it is difficult to exclude others from enjoying the benefits of innovation, despite intellectual property protections, some estimates suggest that the social gains from innovation exceed private returns by between 35 and 60 percent. Given this differential, private markets will under-provide basic research.¹¹² Government support, but not necessarily provision, of basic research is therefore appropriate.

The most prominent example of a government-sponsored research project that later produced large social benefits is the Internet itself. The precursor of the Internet was a Department of Defense project in 1969, which was created to link together government computers at different sites to share information and data. Interestingly, the Department of Defense contracted with a private firm to develop the military communications network that was the precursor of the Internet. A private technology firm, Bolt Baranek & Newman, won that contract. The initial development of the Internet thus involved public financing, but private production.¹¹³

¹¹¹ Mary Ellen Bates, "What is Happening with the Edgar Database?" *The Information Advisor*, October 1995. Interestingly, EDGAR did not originally provide access to information until 24 hours after the data were available, which allowed commercial firms (such as Moody's and Standard & Poor's) to service the market for immediate information. EDGAR now provides immediate posting of information, according to personal communications with the authors from SEC staff.

The government continued to sponsor innovations critical to the development of the Internet; the National Science Foundation, for example, funded the research that led to Mosaic, the first user-friendly web browser. The original Defense Department network began with four nodes; today, more than 300 million people worldwide have access to the Internet.

The line between basic research and applied research is often blurry, and the government should exercise increasing caution as the substance of the research moves more toward commercial applications.

Yellow Light Principles for Governmental Activity

Principle 4: The government should exercise caution in adding specialized value to public data and information

The more specialized the benefit of a government information service (i.e., that adds value to the underlying data or information), the more cautious the government should be in providing it. For example, the government should produce statistics on macroeconomic activity (e.g., Gross Domestic Product), but should be cautious in producing market studies of specific industries (e.g., analyses of the coal industry in West Virginia and the Powder Basin).

One example of this principle is the estimation of on-line retail sales. For years, private-sector firms have estimated the value of retail sales conducted on-line. Until early 2000, these firms were filling a gap in official statistics: There were no official statistics on on-line retail sales.

¹¹² Council of Economic Advisers, *Economic Report of the President 1993*, page 190.

Yet the extent of such on-line retail sales – and their projected growth – had important implications, for issues ranging from market forecasts to sales tax revenue projections. The private-sector estimates were highly variable and often were based on different concepts. For example, estimates for on-line sales for the fourth quarter of 1999 ranged from \$4 billion to \$15 billion.¹¹⁴ In March 2000, however, the Bureau of the Census issued its own estimates of such sales; its estimate was \$5.3 billion for the fourth quarter of 1999.

Fundamentally, providing estimates of aggregate economic statistics – such as on-line sales – is justified under Principle 1 (providing public data and information is a proper governmental role).¹¹⁵ Government production of on-line retail sales estimates is thus fully justified. This example, however, also raises more complicated questions: For example, should the government attempt to forecast growth in on-line sales? Should it produce forecasts of on-line activity in very detailed sectors – such as estimating the number of “hits” on web pages with music?

Government estimation of aggregate on-line sales seems unobjectionable. In addition, government *projections* of aggregate on-line sales serve a legitimate public purpose (especially given the ongoing debate over the tax treatment of such sales). Just as the government produces forecasts of GDP growth and inflation, it could produce forecasts (which would admittedly be highly uncertain) of on-line sales. The government’s role need not be exclusive; despite official GDP forecasts from both the Administration and the Congressional Budget Office, a large number of private forecasters issue their own projections.

¹¹³ Elinor Harris Solomon, *Virtual Money* (Oxford University Press: Oxford, 1997), page 4.

¹¹⁴ Maria Halkias, “Holiday e-sales fail to match hoopla,” *The Dallas Morning News*, March 3, 2000.

But at what point does the government go beyond providing a public good such as basic information and data? For example, providing detailed projections of on-line sales in specific markets (e.g., forecasts of on-line book sales) would seem to go too far. Such projections fundamentally represent market research, which does not serve a direct public purpose and can be (and is) provided by the private sector. The government should exercise increasing caution as it adds more and more value to raw data or information, or as it provides a more and more specialized service.

Similarly, the government should provide search engines and “ferret” tools to assemble data, but more specialized tasks – such as “cleaning” databases or linking official information to related academic articles – should generally be left to non-governmental entities (including academic institutions, non-profit organizations, and private-sector firms). Such case- or individual-specific tasks have less of a public good nature than the underlying data.

The National Weather Service (NWS) seems to strike this balance well. The NWS is the single, “official” voice in times of weather emergencies.¹¹⁵ But more specialized private-sector forecasts also exist; indeed, private-sector weather forecasting is a \$430 million annual industry, which includes a 24-hour cable channel and 400 private enterprises.¹¹⁷

¹¹⁵ The entry of private-sector firms in this case reflects the government’s sluggishness in estimating on-line activity; such sluggishness, however, does not provide a justification for further delay. Indeed, the government should pursue an aggressive policy of updating national statistics for new developments in the economy.

¹¹⁶ “Policy and Guidelines Governing National Weather Service and Private Sector Roles,” *NWS Operations Manual Chapter A-06*, Jul 30, 1993, <http://www.nws.noaa.gov/im/a061.htm>.

¹¹⁷ *Private Sector Survey*, September 1999.

NWS has provided at-cost access to the public of *any* information it produces, which promotes private-sector use of that basic information.¹¹⁸ According to the mission statement from the NWS Fiscal Year 2000 Annual Operating Plan, “NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public and the global community.”¹¹⁹ Importantly, the NWS operations manual also designates certain areas (e.g., public safety, international issues) as permissible areas for NWS activities, and other areas as the property of private weather forecasters. The manual states explicitly: “The NWS will not compete with the private sector when a service is currently provided or can be provided by commercial enterprises, unless otherwise directed by applicable law.” For example, specialized weather forecasts and analysis for industrial clients are reserved for private firms, with cooperative transmission efforts in the case of weather emergencies.¹²⁰ Thus, NWS’ approach seems to balance the public sector’s role in providing basic information with an appropriate concern about displacing specialized, value-added private-sector services.

One indication of a specialized service is a high marginal cost. The higher the marginal cost of providing the service or information to a specific user, the more specialized the benefit of the service would appear to be. For example, the Department of Commerce’s Tourism Industries office produces customized reports on overseas travel patterns, costing between “\$175 and

¹¹⁸ The Transfer of National Weather Service (NWS), Agricultural Weather Services, and NWS Non-Federal Non-Wildfire Weather Services to the Private Meteorological Sector: A Report to Congress Executive Summary, April 30, 1996, available at <http://www.nws.noaa.gov/im/transcon.htm>.

¹¹⁹ *NWS FY 2000 Annual Operating Plan*, March 8, 2000, <http://www.nws.noaa.gov/sp/aop2000.htm>

¹²⁰ Some industry representatives, however, are not satisfied with the NWS policy position. The Commercial Weather Services Association (CWSA) is lobbying Congress to pass the National Weather Service and Related Agencies Authorization Act of 1999 (H.R. 1335), to amend the 1890 Organic Act and transform NWS policy into law. CWSA claims this formalization of the policy is necessary because NWS has sometimes violated its own written policies. Perceived violations include continued provision of certain specialized services and data-for-research swaps with academic and research institutions that are not available to commercial weather forecasters, who must pay a fee capped at the marginal cost of dissemination.

\$76,000.”¹²¹ Its report on the profile of overseas travelers to 12 U.S. States costs \$1,100.¹²²

These types of specific market analyses do not seem appropriate for a governmental body.

In general, therefore, the presence of a large governmental user fee for user-specific activity should raise questions about whether the activity should instead be undertaken by the private sector. (It is worth emphasizing that if the government *does* undertake activities with substantial marginal costs, user fees should be imposed. But the government should generally not be undertaking such tasks.)

Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances

The government may occasionally be able to “jump start” new markets or provide universal access to a private good that is deemed important enough that all citizens should have access to it.

The government’s decision to provide electricity in markets that were not adequately served by the private sector is an example of this principle. One of the original motivations for Federal production of electricity was to ensure that every household had access to it. At the beginning of the 20th century, less than 10 percent of all households had access to electricity. By the 1950s, nearly every household had electricity.¹²³ This example, however, also illustrates a danger:

¹²¹ Available at <http://tinet.ita.doc.gov/research/programs/ifs/index.html>.

¹²² Available at <http://tinet.ita.doc.gov/cat/b-1998-639-001.html>.

¹²³ Council of Economic Advisers, *Economic Report of the President 2000* (Government Printing Office: Washington, DC, 2000), page 100. It is also worth noting that, at least prior to a national electricity grid, electricity (especially hydro-electricity) likely represented a local monopoly requiring significant regulation – and therefore it is not clear that private production was more desirable than public production.

temporary government activities can often become permanent. Indeed, Federal agencies – including the Tennessee Valley Authority and the five Power Marketing Administrations – still account for roughly eight percent of the Nation’s electricity production.¹²⁴ According to the Congressional Budget Office, “Compared with other major industries, the Federal presence in what is primarily a private and local function is in many ways an anomaly, having changed little since the New Deal era of the 1930s.”¹²⁵

The “yellow light” for providing private goods suggests that the government should be cautious in entering such markets. It also suggests that, when the government decides to enter a private market, it should intervene modestly, and – whenever possible – work in conjunction with private-sector actors. Cooperative ventures with private-sector entities are a means of spurring the new activities and ensure at least a minimal level of private-sector interest, without which the long-run prospects for private-sector provision would appear to be dim.

Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient

Even if a public good or other market imperfection is present, the government should not provide the good directly if private provision coupled with appropriate regulation (including contracting with a private provider) or taxation would be more effective. In many situations, the government may be able to achieve its social objectives more efficiently by harnessing private firms rather than by providing the good or service directly. Indeed, given the weaker incentives often faced by government employees to innovate and reduce costs, the principal motivation for direct

¹²⁴ Congressional Budget Office, *Should the Federal Government Sell Electricity?* November 1997.

¹²⁵ Ibid.

government provision involves imperfect information and uncertainty – in particular, when the government has difficulty in anticipating all possible contingencies or in monitoring the performance of a private provider.

Telephone service is one example of a privately provided good that is subject to regulation. Universal access to a telephone is seen as an important policy objective – both because telephones are subject to network externalities, and because access to a telephone can be important for both emergency purposes and for basic cultural interactions. Yet the government did not (and does not) provide telephone service directly. Rather, it has allowed private firms to provide such service, and then regulated those private firms. Prior to 1983, for example, AT&T was limited to markets directly related to telephone services, and it was required to provide telephone service to anyone willing to pay the government-set fees. More recently, technological developments have changed the view that telephone service is a natural monopoly, in which substantial fixed costs imply that one provider is more efficient than many providers. Regulations have therefore evolved to allow a variety of private firms to serve the telecommunications market.

Providing Internet access to schools and libraries offers another example of this principle. As part of the Telecommunications Act of 1996, the Administration and Congress established the Universal Service Fund for Schools and Libraries, popularly known as the “e-rate.” The goal of the e-rate is to provide all public and private schools and libraries across America access to affordable telecommunications and advanced technologies. The e-rate provides discounts of 20 to 90 percent on the cost of telecommunications, Internet Access, and network wiring within

school and library buildings. The discounts are paid directly to the companies that provide schools and libraries with these technology services and the size of the discount is determined by whether the school, school district or library is located in an urban or rural area and the economic status of the students, normally determined by the number of students eligible for the school lunch program (the more students eligible, the deeper the discount). This year, the program will provide discounts of \$2.25 billion to help bring information technologies to every school and library in America.

The benefit of direct provision relative to private provision with regulation/taxation depends on many factors, including the internal efficiency of the government relative to the private sector in providing the good, principal-agent and other information problems in regulating a private-sector entity, and the potential for innovation and dynamic benefits from private provision. Andrei Shleifer of Harvard University, for example, argues that public provision is preferable only when innovation is relatively unimportant, competition is weak, information problems are substantial, or private sector concerns regarding reputation are inconsequential.¹²⁶

Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line

Continued growth in Internet commerce and usage requires appropriate protections for privacy, security, and consumer protection. As President Clinton emphasized during his radio address on November 27, 1999, "If we want Internet commerce to continue to grow, we all must work together to make sure that shopping on-line is just as safe as shopping in a mall." Concerns

¹²⁶ Andrei Shleifer, "State versus Private Ownership," *Journal of Economic Perspectives*, Volume 12, Number 4, Fall 1998, pages 139-140.

about privacy on-line are highlighted by survey data showing that 92 percent of consumers are concerned, and 67 percent very concerned, about personal information being misused on-line.¹²⁷ According to one recent study, such privacy concerns may have reduced on-line retail sales by up to \$2.8 billion in 1999.¹²⁸ Other studies project much larger lost sales over time if privacy concerns are not addressed.¹²⁹

Developing the appropriate standards for protecting privacy, security, and consumer protection is one of the most difficult tasks facing both policy-makers and Internet leaders. Before the government mandates standards in these areas, it should first encourage the private sector to develop its own voluntary standards that would be monitored by the government. As former Commerce Secretary Daley stated, “the business community must understand that its action – or lack of action – will determine how this issue is ultimately resolved.”¹³⁰ Should a voluntary approach ultimately prove ineffective, the government would have to stand ready to set the standards itself (after consultation with stakeholders).

The Clinton-Gore Administration’s efforts to promote on-line privacy provide an example of this principle. In 1997, the President directed the Secretary of Commerce and the Director of the Office of Management and Budget to “encourage private industry and privacy advocacy groups to develop and adopt within 12 months effective codes of conduct, industry developed rules, and

¹²⁷ Surveys cited in Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace: A Report to Congress*, May 2000, available at <http://www.ftc.gov>, page 2.

¹²⁸ Forrester Research, *Best Practice Report*, cited in *New York Times* advertisement, March 23, 2000, page A12.

¹²⁹ Surveys cited in Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace: A Report to Congress*, May 2000, available at <http://www.ftc.gov>, page 2.

¹³⁰ Remarks by Secretary of Commerce William M. Daley, Press Conference On First E-Retail Sales, March 2, 2000.

technological solutions to protect privacy on the Internet....”¹³¹ As a result, more than 50 of the largest companies doing business on the Internet and 15 business organizations that represent thousands of other companies formed the On-line Privacy Alliance (OPA). The private sector has also established enforcement mechanisms, which signal to consumers that certain web sites have privacy policies.¹³² For example, more than 1,200 web sites carry a privacy seal from TRUSTe, the first on-line privacy seal program.¹³³ Over 450 web site carry the BBBOn-line privacy seal, and 28 web sites have been licensed to carry the CPA WebTrust seal.¹³⁴ Some of the largest technology companies are taking additional steps to promote privacy: a number of market-leading companies have announced that they will not advertise on web sites that do not post privacy policies.¹³⁵

As the private sector has taken steps to encourage on-line privacy, the percentage of web sites with privacy policies or information practice statements has increased substantially, from 14 percent in 1998 to 88 percent now.¹³⁶ Despite this progress in the number of sites with privacy policies, there are still significant concerns about both the quantity and quality of the privacy statements. For example, as *Business Week* noted, “few Web sites give consumers real choices

¹³¹ Presidential Directive on Electronic Commerce, Memorandum for the Heads of Executive Departments and Agencies, July 1, 1997, available at <http://www.ecommerce.gov>

¹³² If a web site publicizes adherence a particular privacy standard, but the site does not actually conform to that standard, the posting is subject to traditional FTC and state enforcement actions. Indeed, the FTC filed suit against (and then settled with) ToySmart, which had a specific privacy standard while collecting customer’s personal information, but was trying to sell that information as part of its bankruptcy workout. In addition, individuals could bring their own legal actions for fraud, false statements, or underlying negligence.

¹³³ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., page 6.

¹³⁴ Ibid.

¹³⁵ As of December 1999, these companies were IBM, Microsoft, Disney, Intel, Compaq, Novell, Procter and Gamble, and American Express.

¹³⁶ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., pages 10-11.

over the data that get collected on-line.”¹³⁷ Furthermore, while a growing number of web sites are adopting the third-party privacy seals described above, most sites still lack them: Only about 8 percent of all sites, and 45 percent of the most frequently visited sites, bear such a privacy seal.¹³⁸ In addition, privacy policies are often buried in fine print. This has recently led the Federal Trade Commission to call for minimum Federal standards for privacy.¹³⁹ The debate over whether the Federal government should impose a minimum standard will continue. But ultimately, it is government’s responsibility to ensure that consumers are protected.

Principle 8: The government should promote network externalities only with great deliberation and care

Promoting network externalities – either through direct government provision of a specific type of good or service, or through a government technology standard with which private providers must conform – is fraught with potential dangers for policy-makers. In particular, policy-makers face two types of risks: They can fail to promote a network that the private-sector is incapable of promoting (and thereby forgo the benefits from the network that would have resulted), or they can promote an inefficient technology (and thereby lock into a network with lower benefits than an alternative network that might have developed in the absence of government action).

History highlights the relevance of both types of risks. The government and the private sector have each had both successes and failures in promulgating technology standards. For example, the government’s adoption of common standards for map-making through the Federal

¹³⁷ “It’s Time for Rules in Wonderland,” *Business Week*, March 20, 2000.

¹³⁸ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., page ii.

Geographic Data Committee seems to have been successful.¹⁴⁰ On the other hand, one of the most prominent examples of a flawed government-set standard involves color television. In the 1940s, RCA and CBS were competing to develop a color television system. RCA was working on an electronic approach, whereas CBS was developing a mechanical system. The CBS system progressed more quickly, and in 1950, the Federal Communications Commission (FCC) adopted the CBS system. Despite its superior performance during the FCC tests held in 1950, however, the CBS system had significant drawbacks: For example, it was incompatible with extant black-and-white broadcast signals without special equipment. In 1953, the FCC therefore switched and adopted the RCA technology, which had by then been sufficiently developed. The Europeans, by contrast, waited another decade to adopt color television standards – and wound up with a better system (PAL and SECAM). Arguably, the U.S. government's intervention in the standard-setting process produced an inferior result.

The government is not alone, however, in settling on standards that appear inefficient: Private markets can also produce standards that are not efficient. Many analysts, for example, believe that Sony's Betamax format for video cassette recorders was technically superior to JVC's VHS format, which ultimately became the industry standard.¹⁴¹

Put simply, the presence of potential network externalities raises difficult policy choices, with no easy answers and no simple rules of thumb. As Carl Shapiro and Hal Varian of the University of

¹³⁹ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., pages 33-38.

¹⁴⁰ See Robert D. Atkinson and Jacob Ulevich, "Digital Government: The Next Step to Reengineering the Federal Government," Progressive Policy Institute, March 2000, page 6.

¹⁴¹ See Peter Passell, "Why the Best Doesn't Always Win", *The New York Times Magazine*, May 5, 1996, page 60. It should be noted, however, that some analysts do not concur that VHS is technologically inferior.

California, Berkeley, argue, "...widespread availability is desirable for many kinds of networked goods. However, it is a large leap from there to say that such access should occur only through government provision or subsidies. After all, many goods with network externalities are provided by the private sector..."¹⁴² Paul Krugman, a Princeton University economist, adds, "...while an acknowledgement of the importance of QWERTY refutes the near-religious faith of conservatives in free markets, it is not at all easy to decide which direction the government should pursue."¹⁴³

Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security)

The fundamental purpose of patents and copyright protection is to provide a financial incentive to private innovators: Without such protection of their intellectual property, the incentives for investing in research and development would be substantially attenuated. It is therefore necessary to trade off the costs of the temporary monopoly granted to inventors and others against the benefits of the innovation and effort that the promise of such a temporary monopoly induces.

Public entities, however, are not governed by the same profit incentives that apply in the private sector. In particular, a patent or copyright should not generally be necessary in order to induce

¹⁴² Carl Shapiro and Hal Varian, *Information Rules* (Harvard Business School Press: Boston, 1999), page 315.

¹⁴³ Paul Krugman, *Peddling Prosperity: Economic Sense and Nonsense in the Age of Diminished Expectations* (W.W. Norton and Company: New York, 1994), page 243.

research or creative work within public-sector entities.¹⁴⁴ Since such an incentive effect is the primary motivation for protecting intellectual property, the government should be allowed to exercise a patent or copyright only in very limited situations. (It may be necessary to create incentives for individual scientists employed within the government to engage in innovative activities. But those incentives need not necessarily take the form of patent rights. For example, under current law, a Federal scientist can earn up to \$150,000 per year from patents.¹⁴⁵ It is not clear that the exercise of such patent rights is the best way of rewarding government scientists for their work. Alternatives include special bonuses, awards, or other types of recognition.¹⁴⁶)

It should be noted that the *exercise* of a patent or copyright is distinct from the *holding* of such a patent. Public entities should be entitled to hold the patent on products or ideas, if only to avoid allowing the patent to be reserved by someone else. But the public sector should generally not exercise such rights – in other words, it should not restrict the use of the technology or product, or charge for its use, despite holding the patent.

More broadly, a governmental entity should generally not be allowed to withhold information from the public solely because it believes such withholding increases its net revenue. As

¹⁴⁴ To some degree, the government is already limited in its ability to enjoy copyright protection. According to Title 17, Section 105 of the United States Code, “Copyright protection... is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise.”

¹⁴⁵ The Stevenson-Wydler Act, as amended by the National Technology Transfer and Advancement Act of 1995, requires agencies to pay Federal inventors the first \$2,000 and thereafter at least 15 percent of the royalties received by the agency for the inventions made by the employee, up to a maximum individual royalty award of \$150,000 per year. Also see Guy Gugliotta, “Science Fields Offer Prestige, Few Perks,” *Washington Post*, Monday, May 8, 2000, page A21.

¹⁴⁶ It may be difficult to determine the relative contributions made by different employees. But that problem is not unique to the public sector: it may be difficult to create the proper *individual* incentives within the private sector also if such relative contributions are difficult to monitor.

discussed below, maximizing net revenue is generally not an appropriate objective for public-sector entities.

Red Light Principles for Governmental Activity

Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active

The presence of significant private-sector activity generally raises a *prima facie* case against the existence of a public good. Therefore, the presence of such firms suggests that one of the primary motivations for direct government provision of a good or service – that it is a public good – is likely to be absent.

Furthermore, the government should generally *not* enter markets to provide more competition to existing firms. If the government is concerned about the lack of competition in a market, it should use anti-trust and other tools to address the underlying barriers to such competition. To the extent that the government is concerned that extant private-sector activity is either insufficient or excessive relative to some social optimum, it should generally encourage or discourage such activity through other incentives (e.g., taxes and subsidies) rather than direct provision itself.

It should be noted that this principle does not apply to private-sector activity that results purely from governmental inefficiencies. In particular, the presence of private-sector firms as “facilitators” for an inherently governmental function should not act as an impediment to

improving the efficiency of that governmental function. This principle is therefore not inconsistent with Principle #2 (improving the efficiency with which governmental services are provided is a proper governmental role).

Principle 11: The government (including governmental corporations) should generally not aim to maximize net revenues or take actions that would reduce competition

In general, maximization of net revenue (or “profits”) is not an appropriate objective for public-sector entities. Commercial activities in which the government's goal is net revenue maximization should therefore raise concern, either because the activity should be undertaken in the private sector (if no governmental role is warranted) or because the public-sector entity is not appropriately fulfilling its mission (if a governmental role is warranted).¹⁴⁷

A vivid example of the dangers associated with net revenue maximization by governmental agencies or corporations is offered by the U.S. Enrichment Corporation (USEC), a government corporation created in 1992 that was subsequently privatized in 1998.¹⁴⁸ USEC inherited the Department of Energy's role in enriching uranium for use in nuclear power reactors. As a government corporation (and subsequently as a private corporation), USEC's net revenue maximization was inconsistent with a crucial non-proliferation program of the U.S. government: the highly enriched uranium (HEU) deal with Russia, under which 500 metric tons of Russian weapons-grade uranium is blended into reactor fuel and sold to U.S. utilities. USEC serves as

¹⁴⁷ Limited circumstances may exist in which profit maximization is the best objective for a public enterprise. See, for example, G. De Fraja and F. Delbono, “Alternative Strategies of a Public Enterprise in Oligopoly,” Paper presented at the 1st Congress of the European Economic Association, 1986. We suspect, however, that the necessary conditions for this result are relatively rare in practice.

¹⁴⁸ For a discussion of USEC and the problems inherent in its privatization, see Peter R. Orszag, “Privatization of the U.S. Enrichment Corporation: An Economic Analysis,” presented at the Brookings Institution, February 2000, available at <http://www.sbgo.com/papers.htm>.

the U.S. government's executive agent with the Russians. But USEC's marginal cost of producing enrichment from domestic sources is significantly lower than the cost of the Russian material, so that the more it imports, the higher its costs. Net revenue maximization is therefore inconsistent with national security objectives (since net revenue maximization would imply importing none of the Russian material, whereas national security would be best served by importing as much of the Russian material as possible).

Governmental agencies or corporations should also not undertake actions that reduce competition – such as imposing higher costs on existing rivals, erecting entry barriers, or circumventing restrictions on below-cost pricing. Interestingly, entities that seek to maximize revenue rather than profits may have a *stronger* incentive to engage in such anti-competitive behavior than profit-maximizing entities. Indeed, researchers David Sappington and J. Gregory Sidak have identified “a variety of plausible settings in which public enterprises have stronger incentives than profit-maximizing firms to pursue activities that disadvantage competitors. Quite often, the less concerned is the public enterprise with profit, the stronger are its incentives to undertake activities that disadvantage competitors.”¹⁴⁹ Intuitively, a concern over revenue maximization could more easily lead public-sector enterprises to engage in costly activities (e.g., pricing below marginal cost) that reduce profits but raise revenue.

A related issue is that predatory pricing and other anti-trust laws do not generally apply to governmental agencies. Sappington and Sidak therefore argue that “the optimal design of

¹⁴⁹ David E.M. Sappington and J. Gregory Sidak, “Incentives for Anticompetitive Behavior by Public Enterprises,” AEI-Brookings Joint Center for Regulatory Studies, Working Paper 99-11, November 1999, page 1. See also John R. Lott, “Predation by Public Enterprises,” *Journal of Public Economics*, 43 (1990), 237-251.

antitrust law as applied to public enterprises also merits extensive study.”¹⁵⁰ The application of predatory pricing laws to public entities could help to minimize the opportunities for such entities to behave in a socially counterproductive manner.

The difficulty is thus that neither profit maximization nor revenue maximization is generally an appropriate objective for public enterprises. Much more attention must be given to defining appropriate objectives for such enterprises; an objective of profit maximization or even revenue maximization should serve as a warning sign that further scrutiny is necessary.¹⁵¹

Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected

Data provided on-line to one government agency are often useful to another government agency. But the sharing of such information between government agencies – or for different purposes within an agency – may compromise an individual’s privacy. More broadly, individuals should have discretion over what type of information is provided to a government agency on-line, and then how that information is disseminated to others inside or outside the government. In the absence of such protections, the government should not be allowed to provide goods or services on-line.

¹⁵⁰ David E.M. Sappington and J. Gregory Sidak, “Incentives for Anticompetitive Behavior by Public Enterprises,” AEI-Brookings Joint Center for Regulatory Studies, Working Paper 99-11, November 1999, page 24.

¹⁵¹ One argument sometimes proposed for profit-maximizing behavior by some governmental agencies is the cross-subsidization possibilities that the resultant profits can offer. But even if the activities that are being cross-subsidized are important policy objectives, it is not clear that the best source of revenue for them is profit-maximizing behavior. To be sure, it is possible in some situations that the distortions imposed by the profit-maximizing behavior are lower than the distortions that would be imposed by any other source of government revenue. But such situations would seem to be relatively rare, and therefore one arm of the government should

For example, it would not be appropriate for the Bureau of the Census to share individual data with the Postal Service, in order to allow the Postal Service to better target its new eBillPay program. Similarly, it would not be appropriate for the Postal Service to share the information it gathers as part of that program with the Internal Revenue Service, to ensure compliance with the tax code.

Recent media reports suggest that government privacy practices are sometimes deficient. For example, Scripps Howard News Service reported that the activities of individuals who visited anti-drug web sites operated by the White House were being tracked without their knowledge. In response, the Office of Management and Budget reportedly directed all government agencies to review their privacy standards and to use “cookie” programs only if there were a “compelling need.”¹⁵²

The upshot is that in addition to ensuring appropriate privacy standards for the private sector (Principle #7), government agencies themselves must ensure that visitors to their web sites are offered appropriate privacy protections. As Jacob Lew, the director of the Office of Management and Budget, wrote in June 1999, “Looking ahead, as contemplated for instance by the Government Paperwork Elimination Act, people will conduct more and more business and other activities with the Government electronically. We cannot realize the full potential of the web until people are confident we protect their privacy when they visit our sites.”¹⁵³

generally not engage in profit-maximizing behavior merely to cross-subsidize another arm. To the extent that budgetary accounting rules encourage such cross-subsidization, modifications to the rules should be explored.

¹⁵² Lance Gay, “Federal agencies criticized for ‘snooping’ on Web sites,” *Seattle Post-Intelligencer*, June 24, 2000.

¹⁵³ Jacob J. Lew, “Privacy Policies on Federal Web Sites,” Memorandum for the Heads of Executive Departments and Agencies, M-99-18, June 2, 1999.

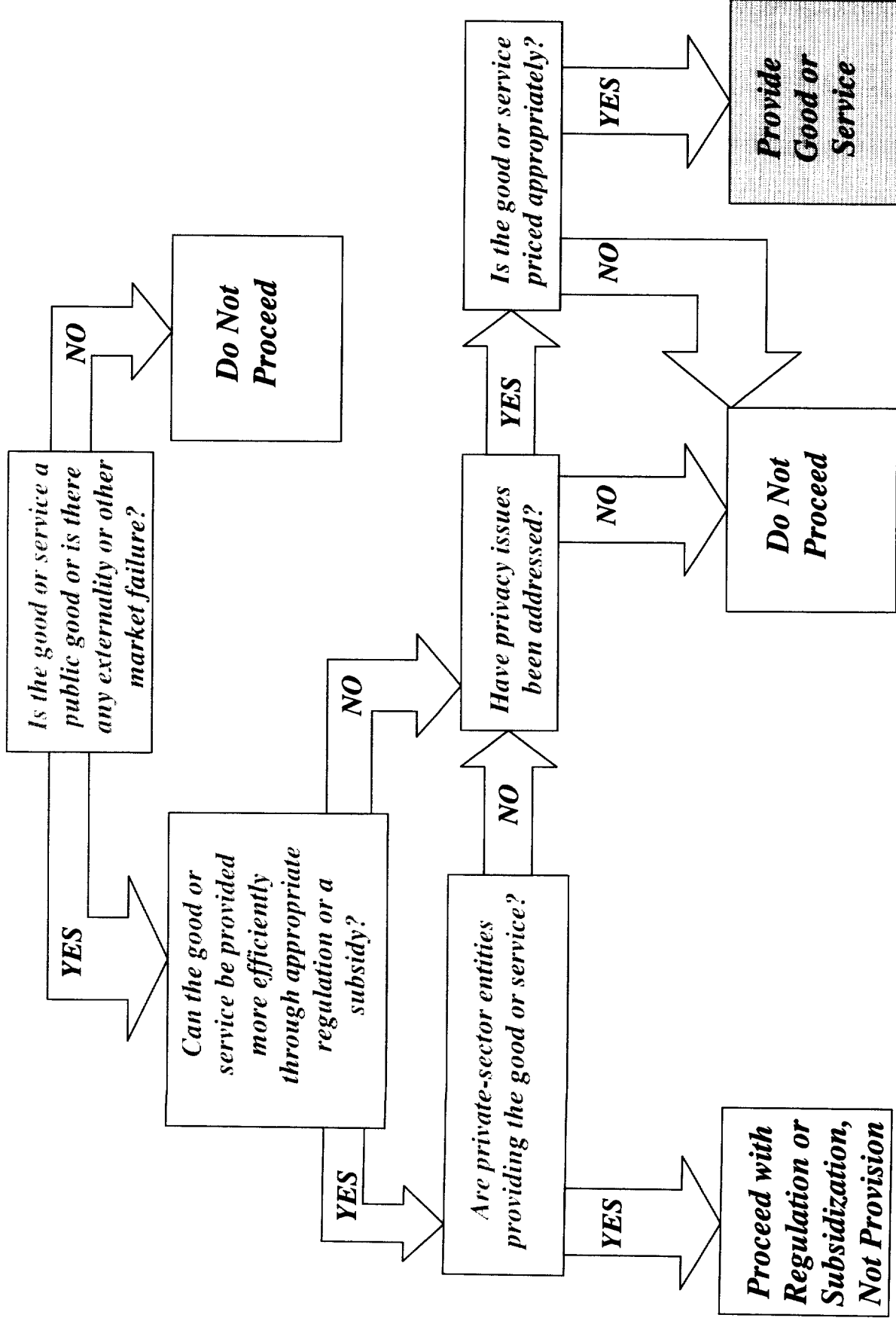
A Decision Tree for Policy-Makers

The preceding 12 principles can be combined into a “decision tree” for policy-makers to evaluate proposed governmental actions. The tree below illustrates the steps involved in such a decision process.

In evaluating whether a good or service should be provided by the government, the first question policy-makers should ask is whether the good or service is a public good or externalities (or other market failures) are present. If the answer to that question is no, the government should not provide the good or service. If the answer is yes, policy-makers must proceed to the next question, which is whether the good or service can be provided more efficiently through appropriate regulation or subsidization, relative to direct public provisions. If the answer to that question is yes, the government should proceed with appropriate regulation or subsidization if private-sector entities are already active, and not attempt to enter the market as a direct or indirect service provider itself. If either public-sector provision would be more efficient or if no private-sector entities exist, policy-makers should proceed with direct provision only if privacy and pricing issues have been appropriately addressed.

In practice, implementing the decision tree is difficult. For example, determining whether a good or service can be provided more efficiently through appropriate regulation or a subsidy is a complicated empirical issue. Nonetheless, the decision tree should serve as a useful framework for government policy-makers to decide whether to directly provide a good or service.

Decision Tree for Policy-Makers



PART III:

CASE STUDIES

Case Study: The Department of Labor's On-Line Job Market Information

The Department of Labor, in conjunction with state-operated Public Employment Service offices, operates America's Job Bank (www.ajb.org), the largest on-line employment database. The site includes nearly 1.5 million job listings and nearly 2.5 million registered job seekers. The Job Bank is funded through Unemployment Insurance tax revenues, and there is no charge for use to any employer or job seeker. Most of the postings are for full-time, private-sector jobs that cover all skill levels, industries and sectors.

In addition to America's Job Bank, a number of private-sector job boards exist. Indeed, a search for the term "job search" on eleven popular search engines returned over 100 job search sites, although the vast majority of them were returned only by a single search engine.¹⁵⁴ In addition, four of the search engines (About, Excite, LookSmart and Lycos) included their own job boards. Most of these private sites list all types of jobs, but some sites specialized in certain cities or states; others specialized in positions for executives, librarians, IT professionals, recent college graduates or elder care workers; and other sites focused on Federal government jobs. One site directly searches America's Job Bank, with an interface that may be easier for some people to use.¹⁵⁵

¹⁵⁴ The search engines used for this search were: About, Excite, Google, GoTo, Hotbot, LookSmart, Lycos, MSN, Netscape, NorthernLight and Snap. The search was conducted in April 2000.

¹⁵⁵ The site is <http://www.fullwebinfo.com/jobsearch.htm>.

America's Job Bank

All U.S. employers are eligible to post job openings on America's Job Bank (AJB) after registering with their state employment office. The only exceptions are that employers may not require a significant financial investment or charge a fee to a job seeker, and the position advertised cannot be involved in a labor dispute. Once an employer is registered for the service, the employer can post and update job listings. By default, jobs are posted for 45 days. During that period, employers can close the listing if the position is filled in a shorter amount of time, extend the posting period, or temporarily withdraw the listing with the option to re-post it later. In addition, registered employers may search for job-seeker resumes by occupation, keyword, or resume number. An occupation search allows employers to choose one of 22 pre-defined occupation groups,¹⁵⁶ then allows the option to further narrow the search with subcategories of the groups. A keyword search allows the employer to choose certain words important to match for the job's title, objective or skill. Both of these types of searches can be further refined by the job seeker's available location, educational attainment and desired salary range, and the date the resume was posted. Resumes are also searchable by specific resume number.

Job seekers are free to search job listings in a similar manner. Seekers can search by occupation within the 22 pre-defined groups, or by occupation sub-category, or by keyword. Seekers with a military background can also search by Military Occupation Code. These searches can also be

¹⁵⁶ The categories are the following: administrative support; cleaning and grounds maintenance; clerical, secretarial and office; community and social services; computer, IT and mathematical; construction and extractive; education and training; engineering and architectural; farming, fishing and forestry; food and lodging; health; installation, maintenance and repair; legal and compliance; management; media and arts; personal services; physical, life and social science; production and manufacturing; protective services; sales; sports and recreation; transportation and material moving.

limited by geographic area, education requirement, salary offered, and date of posting. If a job seeker chooses to register confidentially with his or her state agency, then more options are made available. Registered job seekers may save a customized job search profile, and can register for an automatic e-mail update when new matches to the profile are found. Registered seekers can also create and submit a resume to be made available to employers (for 60 days by default), and can generate on-line cover letters for posted jobs.

The America's Job Bank web page has a prominent link to the Career InfoNet – a service that also provides employment information and assistance. The information allows the user to search by skill level for occupations that are fastest growing and highest paying, or with the largest employment or the most job openings. Other options include searching for employers by name, and viewing state profiles with employment statistics and government, education, and culture resources. Another link takes the user to America's Career Kit, a site that offers advice on how to get a better job or invest in more skills, suggestions for resources for financial assistance for education and training, and more advice on job searching – including government offices to contact for help and instructions on how to write an eye-catching resume.¹⁵⁷

Industry profile

As noted above, there are a variety of private-sector job market sites. Two of the most prominent are Monster.com and Headhunter.net. Monster.com has an eye-catching interface and is organized to send users to the appropriate area depending on their needs. The site targets individuals throughout their career cycle (“Intern to CEO”), and offers advice and news

specifically tailored to different career stages. For example, students are told how to utilize college alumni connections to land their first jobs, while executives are offered tips on how to negotiate stock option packages. Monster.com is owned by TMP Worldwide, a recruiting firm founded in 1967. In the spring of 2000, the site was among the top 100 most-visited websites with 10.1 million unique visits per month, 5 million job seeker members, 2.3 million available resumes, and 386,000 jobs posted.

Job seekers can search listings by location, keyword, or one or more of 42 job categories, and also have the option to browse the job listings. In addition, if the job seeker fills out an optional registration form, the seeker can create multiple resumes that are searchable by employers. The site also tailors career advice and information to the user. Seekers are never charged for use of the site. Employers can list individual jobs in a single job-search category for \$275 per 60-day posting. In addition, they can purchase access to Monster's searchable resume database.

Headhunter.net has only a fraction of the number of the job postings boasted by AJB – about 169,000 jobs and 360,000 resumes were available in February 2000. But the site claims to have the largest job database of positions fewer than 30 days old, and reports that 90,000-110,000 unique users visit the site every day. Headhunter.net boasts user-friendly design and a capability for job seekers and employers to search by geography, salary, travel requirements, profession, experience and key word. It has restrictions similar to those imposed by AJB: postings are prohibited for jobs that require a monetary investment by the job seeker, for Multi-Level Marketing positions, business opportunities, and jobs related to the adult entertainment industry.

¹⁵⁷ Much of the advice is in the form of links to other websites – many of which are at Monster.com.